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EXPERIMENTS ON CYSTICERCI OF TÆNIA PISIFORMIS BLOCH AND OF TÆNIA SERIALIS GERVAIS *

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The life histories of the dog tapeworms, *Tænia pisiformis* Bloch and *Tænia serialis* Gervais, are understood, but to what extent other vertebrates than the usual hosts constitute suitable environments for the development of the ingested cysts of these tapeworms is a question that deserves further consideration. This question, together with the custom of feeding to chickens the common wild rabbit (*Lepus floridans mearnsi* Allen) and the hare or jack-rabbit (*Lepus campestrus* Bachm.), led the writer to carry on some experiments to ascertain whether *T. pisiformis* and *T. serialis* will develop in fowls.

As is known, the common wild rabbit or cottontail is the intermediate host of *T. pisiformis*. The larval form (*Cysticercus pisiformis* Zeder) develops in the peritoneal cavity, omentum, and mesentery. In eastern Kansas a high percentage of the cottontails is infected with these cysticerci; Scott (1913) examined sixty-four cottontails taken in this vicinity and found this cyst in nearly 84 per cent. of them. All of the rabbits used in these experiments contain *Cysticercus pisiformis*.

The chickens used in the experiments were kept from the time of hatching in a fly-proof enclosure and fed upon food free from animal tissues. In the first experiment, the cysticerci were removed from the omenta and mesenteries of the rabbits and fed at once to the fowls, care being taken to prevent injury to the cysts before they were swallowed. *Cysticercus pisiformis* was fed to three chickens. To the first, five on July 8 and sixteen on July 10. To the second, five on July 8 and ten on July 10. To the third, twenty-three on July 13. Two months later (September 5, 8 and 12, respectively) an examination of these chickens failed to reveal a tapeworm.

It is known that the intermediate host of *T. serialis* is the hare or jack-rabbit, although the cottontail occasionally harbors the multiple cyst, *Coenurus serialis Gervais,* of this cestode. The seat of infection is in the connective tissue, particularly intermuscular, of the head, neck, thorax, loins and limbs.

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In the second experiment, the multiple cysts (with one exception) were not removed from the loins of the hares until the latter had been dead twenty-four hours. During this time, however, the lowest temperature of the surrounding air was approximately 40° F. In all probability, the cysts were not subjected to a temperature sufficiently low to impair their vitality, for Ransom (1914) has demonstrated that a prolonged (six days) temperature of 15° F. is required to kill *Cysticercus bovis* in beef. Nor is it at all likely that the length of time was sufficient to seriously lessen the vitality of the cysticerci, as Baillet (1863) has found that *Cysticercus pisiformis* maintains its vitality for as many as eight days after it has been exposed to the air. Multiple cysts were removed from the hares and fed to three chickens. To the first, one on July 8 (immediately after the death of the hare). To the second, twenty-four on December 12. To the third, twenty-two on December 12. On September 5, January 16 and 30, respectively, these chickens were examined and in no case was a tapeworm found.

In looking up the literature on these two cestodes, the writer was surprised to find so many records of attempts to infect mammals with the cysticerci of these tapeworms. Moniez (1896) fed cysticerci of *T. serrata* to two human volunteers and no tapeworm developed. In 1898, Galli-Valerio swallowed six of these cysts without developing a tapeworm. Hall (1914) ingested three *Cysticercus pisiformis* from a freshly killed rabbit with no results. In 1913, Scott fed *Cysticercus pisiformis* to swine and in no case did a tapeworm develop. The failure of attempts to infect swine, fowls and man with *T. pisiformis* indicates that this tapeworm is somewhat specialized with reference to its host.

So far as the writer has been able to ascertain, *T. serialis* has not been reported from man. Galli-Valerio (1909) ingested two living scolices from *Coenurus serialis* without experiencing any discomfort and without becoming infected. Hall (1910) failed to develop a tapeworm after swallowing three living scolices from this cyst. Hence, it appears that *T. serialis* cannot develop in man. The attempt of Thomas to infect cats and ferrets by feeding to them the larvæ of *T. serialis* failed, according to Hall (1910). And Scott (1913) on feeding these cysticerci to pigs was likewise unable to infect them.

SUMMARY

From the experiments reported in this paper it appears that *T. pisiformis* and *T. serialis* will not develop in fowls. Previous investigations show that *T. pisiformis* fails to develop in man and in swine, and that *T. serialis* does not develop in man, swine, cat and ferret.

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